

May 1st:

We arrived in Havana about 6:30 P.M., after a very uneventful trip from Key West, the sea being as smooth as the proverbial mill-pond.

I was somewhat surprised to see bunches of fifteen to twenty sooty terns at various intervals from the time we left Key West until we arrived in Havana Harbor. At one time, not far from the Cuban coast, I saw one of these small flocks going through the same maneuvers which I have seen Caspian terns pass through in the Mississippi valley, that is - leave the surface of the water, and by a series of spiral flights mount high up in the air, and then beat off in a steady flight in a definite direction. Is it possible that they do this to gain direction?

A Mr. Abbot, solicitor for the Plaza Hotel, met us at the pier and helped us through the Customs with our hand baggage. The rest he said we were to leave until tomorrow, when Dr. Della Torre would help us in the matter. We drove up to the hotel and I registered for room 253. This hotel is rather interesting - built according to the Spanish architecture, high ceilings and huge windows in every room, opening out into the street or air spaces. Floors all tiled and walls whitewashed, strictly sanitary in every respect.

Shortly after reaching my quarters, Dr. Della Torre arrived with his secretary, bringing me a U.S.N.M. letter bearing a shipping notice. We talked over plans for the morrow and he left me about 8:30, by which time I was hungry as a bear, so I hunted up the bunch and we went to dinner - that is, Greenlow and I, Simpson, not feeling well, having turned in. After dinner there was a ball in the dining room - "Tango Tea" would be a better name for it, or Dansant would be still better - a demonstrating couple leading in a number of very fine dances - very charming, graceful, beautiful, and free from the usual objectionable features so frequently seen, a pure sweet graceful combination of rhythmic motion and music. I watched until 10:30, then wrote letters to Signa, Mother, Anna, Dr. Mayer, and Miss Kal lenback, asking the latter when I might call.

I should have added a word of general impression upon reaching these shores. The little of the Cuban coast seen indicates a raised beach shoreline of what appears to be eroded limestone, above which comes several raised beaches, the whole forming what might be called the coastal plain, behind which rises mountains in the interior. The beach

rock is of a yellowish tint, and there exists a beautiful harmony between the buildings along the shore and the ground tint. The old weather-beaten walls of Morro Castle look like the weathered beaches themselves, and were it not for the red tiled roofs of some of the houses, one might believe that they had been carved out of the solid stone of the region.

The Harbor has a somewhat flask-like appearance, the neck of the flask corresponding to the entrance. Havana, as seen from the steamer on entering recalls strongly such places as Algiers, all the houses being covered with a coat of mortar - almost all a shade of light yellow like the native rocks, although some are red and others blue or bluish, the whole giving one a most restful feeling, so different from our towns in the United States where little harmony exists in the architecture or color scheme. Among these buildings one sees plots of green turf and stately royal palms and cocoanuts rearing their towering crowns above the abodes of man. I think I shall like Havana. From the veranda of the Hotel - the Plaza - there stretch before me a veritable blaze of electric illumination.

May 2nd:

Strange as it may seem, Dr. Del le Torre was at the Hotel before I had my breakfast. We set out at about 8:30 for the Customs House; from there to the Department of Customs; from there to the Department of State, where the head of each department received Dr. Del le Torre most friendly. I find that every one appears to love this man, and that all things within reason seem possible when he takes hold of them. I also learned that the Smithsonian letter-head makes quite an impression upon the local government. In spite of everything that we did, we were unable to reach the Customs House in time to release our effects, the day being Saturday, when all the offices close at 11:30 AM., so it is all off until next Monday. I did, however, get my trunks released, and they have been sent to the Hotel, and I was soaked \$1.50 for transportation.

We returned to the Hotel for luncheon, walking from the pier, and testing my sense of direction in the tortuous-streeted city. I find it is still good.

After luncheon we made a few more futile efforts to get our launch released, and after being fairly tired out we gave up, going over to the quarantine camp where they have isolated the plague suspects from the plague zone, and where they test them for temperature for seven days, that being the incubating period for Bubonic Plague.

We crossed over with Dr. J.A.L. del Valle, who is in charge of this compound, and who holds that the situation is completely under control. I had a clipping here from today's paper, La Lucha, on the situation.

Also one from the same paper, calling attention to our expedition. The latter is quite characteristic and needs no comment. I should have stated before that Gill hunted me up the first thing in the morning. He is in fine shape but the poor fellow was hurried off so suddenly that he was completely strapped. Here again I had a typical experience. I called up last night to find in what room he was quartered and was directed to No. 7; then, finding this empty, to 434. This being locked, I put a memorandum under the door, which was delivered to him at the desk this morning. He tells me his room is 270.

This also brings to mind that after I gave Del le Torre both my Florida declaration and that covering the shipment from Washington, he failed to hand the latter to the head of the State Department, the result being that he will have to go through all the red tape again on Monday morning. Poor fellow! He cannot get over carrying every letter that he has recently received from any member of the party or local official in his pocket, or, very often, in his hands. It is a wonder to me he did not lay some of them down somewhere and lose them, but he seems to have a tight grip on them. At 3 P.M. Torre and I left for the University. This occupies the buildings and grounds of the old Fort, beautifully situated behind the city on an eminence commanding a view of the entire town and the panorama behind, - a most charming picture, which causes one to feel at once a love for the place, leaving a peaceful feeling, that restful quiet, characteristic of the countries inhabited by the people of Manana. The royal palms in the botanical gardens below the University terrace formed a dense copse, a most delightful picture. There is a tablet on the wall of one of the entrances, stating that Leonard Wood had dedicated this Fort to Learning. These are not the words, but the sentiment of the situation: I wish humanity the world over might learn a lesson from this and bestow more funds upon the acquisition of knowledge and a little less upon armament.

Dr. Dela Torre's nephew, Dr. Heurta, a graduate of Columbia University, was to give a lecture at 4 P.M. before the Conferencia on the geology of Cuba, so I accepted an invitation to it. The lecture was of a peculiar type, sufficiently interesting to merit a little note here. He began by projecting a slide upon the screen, of Mt. Orizaba, stating that we ordinarily held to the view "as everlasting as the mountains", but that this was an error, that mountains were as changeable as the clouds - accompanied by a slide of a coast view with cloud effect - only that the change was slower.

Then followed a slide of the Cuban map, in which he outlined the coastal deposit, etc., of calcium carbonate and the mountains of travertine or serpentine(?). This was followed by a discussion of the geology of the immediate region about Havana - the four raised beaches or terraces of organic deposits, and a description of the

characteristics and composition of each, accompanied by lantern slides. After the lantern slides, students made test-tube chemical experiments, demonstrating the chemical nature of these deposits, the Professor in the meantime explaining the students' efforts.

This was followed by a short historical sketch of the deposits and a rap at Dr. Vaughan about the jurassic, the presence of which was dwelt upon at some length and demonstrated by a display of two large enticular nodules at least a foot in diameter, having quite a number of small ammonites embedded in them.

The lecture was followed by a summary of the year's work by the presiding officer, who is Professor of History, and who delivered himself of a very creditable lecture. Heurta was both too diffuse and too general in his remarks. He attempted the impossible in the short space of an hour and a half. Any short phase of his discourse might well have consumed that amount of time.

I had a seat next to the Chairman on the platform. The arrangements of the hall fittings being rather interesting, were something like this; the speaker walking back and forth, as indicated by the sinuous line.

After the lecture we walked down the road from the University to the Botanical Gardens, where all Havana was assembled to see the Horse, Cattle, Dog, Pig, etc., Show - a regular country fair.

I have never seen a more picturesque crowd or more beautiful women - really beautiful - in any place than here. They vied with the beautiful flowers - yea, eclipsed them completely.

Dr. De la Torre next drove me back to town through the fashionplate section of the city, along Malacan Drive, which recalls the Malacan of Manila and the Plaza, and agreed to call for me tomorrow. He must be dreadfully tired, for we have been spinning about all day like a top.

The rest not being at hand, I took dinner alone. After dinner I called at the house Mr. von Bayer gave me as Miss Kallenbach's address, and found that she had left a few days before for New York, probably not to return, so I returned and joined the bunch to visit a theatre that was said to be the toughest thing in Havana. I have often heard of it, and I confess the statement was perfectly true. Rotten in the highest degree, putrid and filthy. Never again! Once in a lifetime is more than enough. It was indeed a psychopathic study. We stayed only through one performance and then stopped at a cabaret and watched them dance until midnight, drinking good, yes, very good, Cuban beer.

May 3rd:

Had my trunks brought up and have gone through them, rearranging thinds, and have been reading all morning while waiting for De La Torre, who, though it is now 2 P.M., has not as yet arrived.

Took a car ride out to the University grounds but found the gate closed. The same also was the case at the Botanical Gardens. Made a number of snapshots of the Royal palms through the fence, and also of the University buildings in a similar manner.

I next strolled down through this out-of-the-way part of the town to the Malacan Drive and back through the Prado. My impression today is somewhat different from what I expressed yesterday. Yesterday undoubtedly was a gala day, where all the elite element was on parade at the show. Today's dictum would be - fat women and cadaverous looking men. Watched the moving pictures on the Prado and the moving crowd for a while, then turned in. De la Torre had evidently taken Sunday off.

May 4th:-

De la Torre called at the Hotel about 10 A.M. and we started on another mad run of visits from Cabinet officer to Cabinet officer, only to find that the Cabinet was in session and would be so until 3 P.M., so we adjourned until then. At 2:30 we again set out and by 4:30 had all the necessary papers to admit all our things duty free. We next hunted up De la Torre's nephew, who is a Customs-house broker, and who will have our things released. It seems as if my New York shipment had not arrived as yet. Young De la Torre told me that the New York Express companies are in the habit of holding express shipments up until they have a large consignment to save cost of billing. If this should be the case it would be simply awful. It will also be necessary to get Henderson to sign for his stuff, as I do not have his power-of-attorney for him. Thank Goodness, he will be here Tuesday.

Drove out to the son of Dr. Poe, the famous naturalist, for whom De la Torre today secured a pension of \$600 for one year. The poor chap is 82 years old, and quite feeble. De la Torre is certainly a jewell; good-hearted to a fault.

We next drove about the Malacan Drive and the Prado, returning to the Hotel at dusk. Spent the rest of the night in my room reading. Simpson and Gill went out collecting near the bathing beach today. They found some Cerion Chondropomas, Oleacinas, several species of Helicina, Polygyra, Subulina, Cylindrella, and a lot of praticolella. The latter were introduced on the Island about two years ago.

De la Torre called here about 11:30. Said he had been in session with the Director of Education, to arrange "all things". He brought me a letter from Signa and one from the Southern Express Company of Key West, saying they could not ship the stuff I asked them to forward until I sent them a detailed statement of the contents of the package. Went to the local express company and found the head out to luncheon. Will call again at 2 P.M., when he is sure to return. The clipping following appeared in this morning's paper. I think De la Torre wants to make a big thing out of this, to impress the people at large with the enormous status of the work the University is doing. Incidentally he is working on a list of the animals of Cuba, and is much in need of well identified material. He wishes this expedition to make as complete a collection of fish as possible, and to keep a numbered

set here for reference, the other set to go to the U. S. Nat. Museum for naming and classification. I am very willing to do all I can to help him, for this is also what we are after. Returned to the Express Company at 2 P.M. and cabled the express agent of Key West to send all the things consigned to Havana. We next went on a still hunt to the Customs House and found that my shipment had arrived and that I will be able to get it manana. Henderson and Clapp arrived at 6:15 on the steamer "Mascotte" and we got their baggage off on the letter of exemption without opening anything. All took supper at the Plaza and had a general good time. Turned in rather late.

May 6th:-

Up early and off on the usual hunt from A to Z, finally succeeding in realizing all our baggage just as the Custom house was closing, so off it went to the Thomas Barara, our schooner to be. We had rented a launch earlier in the day and paid a visit to this schooner, which is 65 feet long and has 20 ft. beam. Then we ordered 290 gallons of gasolene at 34 cents each, for the two launches and made other purchases of

We were all used up when night came and thoroughly disgusted with the "manana" spirit of everybody in town and the many stumbling blocks placed in our way. Tomorrow we hope to get the Key West baggage, which we find has come over on the Miami.

May 7th:

Met De la Torre at 8:30 at the Hotel and all hands proceeded to have a picture taken of the vessel and its staff, etc., which took up almost all the forenoon. We did, however, succeed in realizing the express baggage about 1 P.M., after no end of about, the express agent having positively assured me that we could under no circumstances hope to get it before ten days. We purchased quite a lot of material, and all things are to be at the wharf by 9 manana. I wonder if they will. We all feel that if we do not get away soon we will all be played out. During dinner we had a call from some photographer who wanted to take some flashlights of the Commission, so at 9 P.M. he had his wish fulfilled, and tomorrow's issue of El Mundo is to present the group to the public. Good luck! We took a stroll about town, admiring the beautiful points of the city in the glorious moonlight.

May 8th:-

Here we are. Don't think we look quite as bum as represented, but then - ? So here is the cat! I have thought so all along. I hope he will use it and that it won't all be used as chevos.

Made all the remaining purchases and finally got the last thing aboard about 2 P.M. When De la Torre gives the Captain his papers, the boat may sail.

We left, that is, Henderson, Clapp, Simpson and myself, by rail for Pinar del Rio.

Passed through a lot of interesting country, all flat and suitable for cultivation, covered in many places by Royal palms which in places formed a dense copse. In such locations they are exceedingly beautiful, their straight white trunks forming a rather open wood, while their spreading tops formed a dense mass of green. The Royal palms suddenly gave way to

which, in a way, strongly recall the palmetto of Florida, and these in turn were replaced by the barrel palm, a curious tree which has a tremendous swelling at or near the middle of the trunk - sometimes two as big as a barrel.

Noticed many dead animals in the fields and busy buzzards about them. It looks as if there may have been an epidemic of rinderpest at work here. If so, the buzzards will certainly help the spreading. Most of the cattle seem scrawny and cadaverous - not at all healthy. About 4:30 the Organ Mountains - "De los Organes" - hove in sight and promised to be interesting. We hope to be in them manana. They were visited by a shower this afternoon, which promises to give good collecting.

We arrived at Pinar del Rio at 7:10, and took quarters at the Hotel Ricardo, where we enjoyed an exceedingly excellent dinner.

Havana added one more plague case today.

May 9th:-

Slept like a log, although the others complained of mosquitoes. Up at 5:30, and after enjoying a cool shower, started for breakfast. We experienced considerable trouble in getting breakfast, as most people confine their attention to a cup of coffee and a lump of bread, but we finally got our fill, piled into the auto, and set out for Vinales.

Pinar del Rio is a very pretty little town and the view of it from the Hotel veranda this morning before the sun got out of the clouds and dispelled the slight fog was indeed very pretty. We soon left it behind, passing through a flat plain, quite like the country traversed by the train yesterday, but slightly more rolling. At Kilometer 14 from Pinar del Rio we stopped at a so-called mogote. These mogotes are limestone remnants of a mountain chain which once constituted a range this side of the Sierra Vinales. They are very interesting faunally because here occur the stranded remnants of the mountain fauna. The separation has been of sufficient length to have caused a differentiation to take place in certain of the shells found here. Some shells are said to be generally distributed, but others, like certain of the Urocóptids, have certain representatives on each mogote. This mogote is called Mogote de las Puntas; also del Desconso. Henderson tells me that we have many new things from here, and I shall have a list for future entry.

The scenery as one approaches Vinales is most beautiful, tall mountains with rounded tops rising abruptly from the plain. No taylus slopes, but sheer steep sides covered everywhere, excepting a bald spot here and there, with luxurious vegetation; slender palms of a number of species, and many other trees render this escarpment a more than pleasant sight. In a plain bounded by these ranges and hills nestles the town of Vinales, a peaceful village of about a thousand inhabitants. We lunched at about 11 A.M. and then left by carriage for the Sierra del Vinales. The road passed through a gap in the mountains, the base of which is about 500 feet wide. The mountains rise sheer on both sides; the gap runs north and south. The mountain ridge on the east rises from 800 to 1,000 feet above the plain. The

southern face is badly eroded. Stalagmites and eroded points are pending from an overarching ledge, lending the face a fantastic and weird appearande. We hunted in the gap, which is called Puerto del Ancon, and found among the roots of grass among the boulders two species of Urocoptids - *U. Vinalensis* and *U. Irrorata* and *Propinqua*. Also *Entrochatella elongata* and *microceramus-lata*. Probably not this, but new.

We next went through the gap and hunted along the foot of the mountains on the south side, following this around into the gap. Here we climbed up some distance but found practically nothing that we did not find at the base. We followed the south wall of the gap to a place beside the point rounded in the gap.

The sum total of our catch may be summed up as follows:

Chondropoma vinalensis
 " *egregium*
 " *shuttleworthi*
Urocoptis irrorata
 " *vinalensis*
 " *propinqua*
Liobasis (species?)
Pleurodante guan
Alcadia sagraria
 " *dissimilaris*
 " *velutina*
Entrochatella regina
Helicina adspersa
 " *rotundata*
Cepolis parraiana
 " *bonplandi arctistreata*
Liguus fasciata
Rectoleacina cubensis
Oleacina straminia
 " *incisa*

Thysanaphara stigmatica
Ptenopoma boothi
 " *bilabiatum*
Ammlaria blaineana
Proserpina globulosa
 " *depressa*
Pichardella (species?)

The most interesting of all is, of course, the *Chondropoma vinalensis*, of which we only found a few bones. The most abundant were *Alcadia sagrainana* and *Entrochatella regina*, of which we got a large number.

On our way back we stopped at the first mogote between the Peurta and Vinales on the east side of the road. Here we also took quite a lot of shells and quite a lot of liguus. Simpson went to the next mogote south of this one, also on the east side of the road, and picked up a few things. We heard, on returning to our rig, that De la Torre had passed us on the road, intendint to meet us. I was dead tired and turned in shortly after dark. Have been feeling quite a bit feverish all day. It may be due to too much exercise in the hot sun.

I should have mentioned that on quite a number of pillars of our Hotel, swallows, not unlike our eave swallow, make their nests - a mud wall flat on the pillar. Took a picture of one of the nests.

May 10th:

De la Torre appeared before I was up. We decided to take the bus to Banas de San Vicente. The bus came shortly after 9 and we piled in all our luggage. The fish expert and De la Torre's assistant, arrived on last night's stage and now joined us. The passage through the gap - both gaps, in fact, was most beautiful. Took a number of pictures in our passage. We left all our luggage with Piar(Jose), a prosperous farmer at the Bath. After paying our respects to the family we set out for the cliffs nearby. We passed a cave, then worked up a gorge beyond it. Here we saw a pair of huge woodpeckers, suggesting our ivory-bill. We returned to the cave - that is, Henderson and I, about noon, and found that Clapp had found five living specimens of *Chondropoma vinalensis*. This is said to be more than have ever been found before. Took a swim in the cave and then returned to the house for luncheon. After luncheon we returned to the place where Clapp had made the find, and hunted over the whole region between the cave and the road, finding two more

living *C. vinalensis*. These shells seem to prefer the dark niches and there hang suspended by a slender thread varying from four to eight inches in length. Henderson found one and I, the other. We also crossed a small stream and made an exhaustive search along the cliffs bordering it, but found only a few bones. The catch listed on pages 12 - 13 was duplicated here, two additional species of Urocoptids being added, which may be new. No Microceramus was found.

At the house Rodrigues was catching day-flying moth which were attracted to a Mimosa tree that was in full bloom. De la Torre told me that this was a rare lepidoptera, and that some of the specimens would go to the Museum.

A bath in the sulphur bath took out all the soreness from my body and left me in fit condition for the trip to Esperanza. The stage came by about 5:30 and we were soon on our way, passing through some of the most glorious scenery I have ever seen. The entire ridge of the Costanera de san Vicente is simply one picture after another, which, in the light of the setting sun, was little short of marvelous. We reached Esperanza at dark and thanks to the delay caused by De la Torre, who seems to think that the most important part of the expedition is to see that we are supplied with ice, we finally, as at San Vicente, went off and left him.

May 11th:-

Up early and off for the reef. These near this place consisted of mangrove-covered Keys with loose mud and calcarious algal fragments mixed with the tests and parts thereof of all sorts of animals. We made two hauls in about 5 to 8 feet of water, and the stuff we brought up looks quite promising for mollusks. Examined quite a stretch of shallow water and gathered all we could of marine invertebrate for the collection. Among those collected were four actiniæ of a goodly size and beautiful coloration. These specimens vary very much in coloration. One has the stalk washed with purple lake; the disc and basal half of the tentacles tarre verte (pl. 2 2/4), the lips bright purple lake, which pales and grades into green in the middle. Another specimen has the stalk flesh colored, shading to silver gray at the edge. The tentacles are pale olive green at base, tipped with Hookers green (Pl. 1 2/2). Another has a base like the above but the disc and tentacles are Hookers green, with a bright carmine tip at the extreme point. In still another, the carmine tip is missing. A small species has a flesh colored base with the center of the disc flesh-colored. The ten-

tacles are sepia brown, with narrow cross lines of pale green. I have put these in jars and am magnesium sulphiting them, hoping to get them distended today. At the end of the Journal I will give a list of the tags used.

Have a beastly cold. My nose is streaming like a river and I am barking worse than the dogs, and that is saying a good bit.

We had a visit from Captain , in charge of the Coast Guard steamer Pinar del Rio. Temperature at 7:30 P.M. was 75.

May 12th:-

Simpson, Clapp, Rodrigues, the Patron, and Sidney went ashore for Cerions. I stayed aboard to help Gill with the painting, and to take care of the rest of the specimens gathered yesterday.

De la Torre and the noisy fish expert went ashore for ice and chicken and the boat has a Sunday atmosphere. Temperature 6 A.M., Air: 75; water, 82.

Discovered newspapers aboard, brought by De la Torre, and make the clippings from them, which follow below:

C H

I made a lot of color notes on the simpler invertebrates, many of which are noted in the back of this journal, in connection with this station. The land party found nothing at all, but they made several hauls in shallow water (8 to 12 feet - 2 fathoms -) of cayo arenas. These hauls yielded quite a lot of invertebrates, which I preserved. They are listed under tags #19 - 23 and 25. In the evening the Captain of the Port of Havana arrived in his yacht, but we gave him so little attention that he steamed back to Havana, thank goodness! There is altogether too much time lost entertaining and palavering, which seems to be De la Torre's chief aim.

At 3 P.M. we left our anchorage and made sail for Santa Lucia. We came to anchor after dark, and after a very light supper gave the submarine light a trial. We caught a lot of plankton with a butterfly net (Knowles having forgotten to pack my plankton net - Hang him!). We also caught a number of Hemiramphs and other small fish. We turned in about 10 P.M., with the determination to get up at daylight and search the reefs.

May 1st:

We had breakfast and were off by 6 A.M. Paid a call to Cayo Hutea at the light house in the hope that we would find a reef at this place. There is a small Key a little east of this one off the lighthouse. The water between the two I suppose in no place is over two fathoms. The bottom is largely composed of calcareous agal detritus plus some animal remains overgrown, for the greater part, with *thalassa testudinaria*, a long leaf plant resembling *vallisnaria*. On this bottom we found a number of species of corals and *Actinius*. Also some sponges and crustaceans. On the beach of the light-house were a lot of spirit crabs, some of which and a land crab, were coppered by Simpson and Clapp. We next went to the outer reef of the little island northeast of the light, and here worked in water of depth varying from 3 to 5 feet, securing a lot of corals, sponges, *Plexaures* *Gorgonians*, Crustaceans and a number of small fish. I inverted a pint bottle of copper sulphate into a hole in a coral head and secured a few fish rendered groggy in this manner. The coral was covered by four feet of water.

The coral heads here are scattered, chiefly *Meandrina*.

The Patron helped us in our work and it was amusing to see him sink down below the surface of the water, and, reaching the bottom, open his eyes, getting whatever he was after. He is a splendid waterman and seems to be as much at home in this element as a porpoise. Covers of wire netting used in stores to protect food - had been purchased by Henderson in Havana and we found them not only excellent for catching small fish but also in sweeping the grass, which yielded quite a lot of fine Phosinellas, Columbellids, Trochids, etc. Of fish we secured 18 species. Four species of corals are scattered on the green grass flats some distance off shore. Further out they are present in patches, and these in turn still farther out become fused into extensive reef areas, consisting of larger heads. I secured a few of the large specimens which I later hung on the sea wall. I also put some of the small specimens by for histologizing.

We returned to the schooner at 11 A.M., with a mass of stuff which kept me busy for the greater part of the afternoon.

At 4:30 we made a dredging trip about the ship. We struck a bottom rich in vegetation near shore, with many Echini. Kept 63 of those of the first haul and almost as many of the second. We made three hauls on such bottom in 2 1/2 to 3 fathoms, then steamed out toward the lighthouse where we struck soft mud, (see sample, tag 67) In this we found some Angulis, a small bulla, and a number of small Ophiurians, and other things, although the yield as a whole of the eight hauls was quite poor as far as mollusks are concerned, but rather interesting otherwise. Had to use the lantern to finish putting away things. After dinner we used the submarine light and added quite a lot of plankton and some fish to yesterday's catch. Gill is not well tonight. I hope he will feel better tomorrow, for there is so much to be done if we are to make a showing at all.

We had quite a shower yesterday afternoon which made work under a leaking canvass somewhat trying. Temperature at 6 A.M., Air, 78; Water, 82. Temperature at 7 P.M., Air, 78; Water, 82.

May 14th:

Dr. De la Torre and the vocal expert went ashore yesterday. The first returned at 6, the other at 8 P.M.

It was decided that Henderson, Clapp, Simpson, and De la Torre would visit Pan de ^Asugar, while I am to take charge of the marine work. Accordingly, Greenlaw, the Patron, the fish expert, Rodrigues and I set out for the reef at 5:30. After going over yesterday's field off the little island where we found picking even poorer than yesterday, we steamed out to sea and found that the reef became compact and fine about 2,000 yards off shore, and extended so as far out as we could see. We followed it

up for several miles but found no change in the condition. Here and there an area of white coral sand would make its appearance, extending usually at right angles to the shore line. We made a haul with the dredge in such a place and obtained nothing but a bottom sample. Returned to the schooner at 11 A.M. and worked on the catch. Soon after luncheon we were driven below by a squall which lasted for about three hours, and wasted much of our precious time. The mail steamer arrived from Esperanza and brought me a letter from Signa. It also contained two telegrams for De la Torre, stating that his mother-in-law had died. We dispatched Rodrigues to Pan de Asugar with them. Poor boy! He will have a wet ride, but the rain will bring out the land shells so the party should be a happy one, even if wet.

Rodrigues and the expert returned about 3 P.M., soaking wet. They delivered the telegrams to the man who runs the electric truck from Santa Lucia to the mine, who will hand them to De la Torre, he having stated to them that the party will not leave the mine until tomorrow morning. The temperature at 5:30 this morning was the same as yesterday, that is, air, 78; water, 82. The shower this morning kept down the air temperature to 73, but this soon changed to 78 when the rain stopped about 4:30. The shower showed a 3-inch fall in our vessel set out to catch and note the amount of rain. At 5 P.M. Greenlaw, Gill and I went out dredging. We made five hauls along the mainland shore westward from the anchorage to a little above the entrance to Santa Lucia, then two in midstream up toward the ship. The bottom along the shore - two fathoms - showed much vegetation and a very great number of small sea urchins. In one haul we had 84 of them. Our dredge was simply crammed full of them.

The last two hauls were in 3 to 4 fathoms of soft mud. These yielded some Tellinas and two star fish of gray color, setose above, which shed their arms in a rather reckless manner. I was sorry to lose these as they would have made fine exhibition material, but as it was, I had to tank them. The specimens of these five hauls we have entered under Station #4.

At 8:30 we made a trip to the reef of Cayo Hutea. The night being cloudy and calm, we deemed it good to try the submarine light. We had considerable difficulty in getting to the reef, but finally anchored safely in about 10 fathoms of water right over a splendid specimen of *Porites palmata*. Large fish failed to be attracted but we secured a few small specimens and a fine lot of worms, shrimps and minute plankton. We made a stop in a shallow grass patch - 6 feet - and found nothing different, so we returned

to the ship, reaching it at 10:30, dead-tired and fit for bed. Temperature at 8 P.M., air, 78; water 82, as usual. At 2 A.M. I was almost frozen. Looked at the thermometer and found the temperature 72. Put on more clothes.

Gill is somewhat of a disappointment. To me he seems groggy all the time. He lacks initiative and would be absolutely helpless without constant supervision.

May 15th:

Temperature 6 A.M., air, 78; water, 82. Bright, with scarcely a cloud over the mountains. I hope the land party will have a good day of it. Took care of what remained to be attended to from last night's catch, then set out for the main shore in the hope of securing some exhibition material. This proved to be another grass flat bordering a mangrove swamp and contained little beyond what we had already taken. Only one huge Echinoid was found which seemed to be different from those taken yesterday. The mangrove trees have almost all been killed by the hurricane of 1906. A rookery of cormorants were using these dead trees for nesting sites. We examined several of the nests and found that they contained two and three eggs, while some of them had half-grown young. There are also White Ibis here - in fact, many of them, but these, as well as the Louisiana Herons and Reddish Egrets, seem to frequent the inner edge of this Mangrove thicket, where it borders a rather extensive lake. I will have to pay this place another visit when my camera returns from the mountains, for it is now with the Pan de Asugar party.

We stopped at the entrance to the lake at a landing stage and took a lot of fine Hydroyds from the palm pilings.

In the lead leading to the lake we found Mangrove oysters and Perna hanging in clustering pendants from the Mangrove roots. We secured several of them, as well as a lot of Hydroyds from similar positions. The grassy bottom of the interior lake looked like good dredging ground, so we made five hauls in 1,- 2 fathoms, securing a fine lot of Bulla, Laevicardiums, Venerids, etc. Also some nice worms. Three of these hauls were made in the larger of the two lakes and two in the smaller adjoining one. Secured water and bottom samples in both places. The clouds promising rain drove us to the ship, where we arrived just in time for luncheon. At 2 P.M. the rain began and continued more or less interruptedly until 4:30. These wet afternoons are a nuisance, because they practically stop Gill's work, since his colors, instead of drying, will run, making progress very slow.

At 5 P.M. we steamed down the Bay and made four hauls with the dredge, which resulted in gaining a few more Tellinas and a slender long-armed Ophinrian, a dozen Strombus, etc. The last haul was made near the western end of the Bay. Here we saw a huge flock of White Ibis assembled in the dead Mangrove trees - fully 500 of them. We steamed within sixty yards of them before they took wing. This flock consisted chiefly of adult birds. I also saw a small white Heron, which may have been a Snowy Heron, or the white phase of the little Blue Heron. It was too far from me to be positively determined without a glass. We tried a trip up the channel toward the town, but practically lost our way so made a hasty retreat to gain open water before it became dark. It is surprising to see how the rains are bringing a new fresh green to the mangrove bushes. One would think that having their feet constantly in the water would cause them not to respond to the shower. Probably it is the sweet water that affects them. On our way downstream a Clapper Rail flew across our bow. The sunset was glorious. Reached the schooner by dark. The expert vocalist (very properly designated) says the land party will not return before tomorrow. They are said to have gone to some other point and will go to Pan de Asugar tomorrow. Wish I had my small camera here. If I had we would take some pictures tomorrow. Here is our cook's mixture, which makes one forget cold, etc. It beats my cocktail.

1 1/2 glass Agua diente
1 1/2 " Nector Cubana (Chapparra M. negreira
Sen. C. Habana.)
1/2 " Italian Vermuth
1/2 " Dry Gordon Gin
2 " Water
Sugar to taste,
2 Eggs
Pinch of lemon peel

Shake with ice, and, like my beverage, consume with a receptive mind, to say nothing about the tummy.

It may be added here that a bandage for the head in the morning would not be out of place, and an ice cap comes in mighty handy.

May 16th:

Up at 2 A.M. with every tooth in my head, and left eye and ear jumping, so I took refuge in the cabin in a deck chair, put an aspirin tablet in my cheek and after awhile fell asleep. About 5 A.M. I awoke and found most of the aspirin gone and the cheek all puckered up and practically paralyzed for all the rest of the following forenoon.

Made a trip to Santa Lucia at 8 A.M. This place consists of about a half dozen huts, the largest a shed, being the storehouse for mine products. The mine is about 10 miles from the landing, and the ore is brought down in bags and shipped to Port Amboy. They have shipped 8,000 tons, which is said to smelt 20% copper.

We followed the road leading to the mine, keeping to the woods on the right, which permeated and surrounded a swampy area.

Was able to list quite a number of birds, many of which had notes resembling their near relatives further north. I am now able to give the following list observed at Santa Lucia since our arrival. Species with which I was unfamiliar have been identified with the help of Dr. De la Torre and Gundlach's list. Anatomical material of all species which I was unable to identify at sight and therefore was forced to shoot, has been preserved.

	Rio del Rio	Vinales	Los Banos	Esparraga	Lago Turia	Dinard	Los Arroyos	Cerro Gordo	San Antonio	Cerro Verde	Vinales	Vinales-Pinos	La Sagra	La Sagra	Barbudos	Barbudos	Cabonero
Gull-billed Tern																	
Royal Tern																	
Sooty Tern																	
Hooded Pigeon																	
Tatten-turkey Anhinga																	
Mexican Cormorant																	
Brown Pelican																	
Man-o'-war Bird																	
West Indian Tree Duck																	
White Ibis																	
Glossy Ibis																	
Caribbean Great Blue Heron																	
Egret																	
Snowy Egret																	
Reddish Egret																	
Louisiana Heron																	
Little Blue Heron																	
Greater Antillean Green Heron																	
Cuban Green Heron																	
each crowned Night Heron																	
Yellow-crowned Night Heron																	
Cuban Sandhill Crane																	
Cuban Clapper Rail																	
Coot																	
Avocet																	
Black-necked Stilt																	
Willet																	
Spotted Sandpiper																	
Kiskadee																	
Antillean Plover																	
Mexican Jacana																	
Bobwhite																	
Cuban Bobwhite																	
Red Crown																	
White-crowned Pigeon																	
West Indian Mourning Dove																	
Zenaida Dove																	
Cuban Ground Dove																	
Turkey Vulture																	
Marsh Hawk																	
Sharp-shinned Hawk																	
Cuban Sharp-shinned Hawk																	
Mexican Black Hawk																	
Cuban Sparrow Hawk																	
Audubon's Caracara																	
Osprey																	
Cuban Parrot																	
Ani																	
Cuban Lizard Cuckoo																	
Cuban Tropicbird																	
Belted Kingfisher																	
Cuban Tody																	
Cuban Ivorybill																	
Cuban Green Woodpecker																	
Supercilious Woodpecker																	
Cuban Flicker																	
Nighthawk																	
Cuban Hawk																	
Ricord's Hummingbird																	
Giant Kingbird																	
Kingbird																	
Gray Kingbird																	
Couch's Kingbird																	
Cuban Pewee																	
Crested Flycatcher																	
La Sagra's Flycatcher																	
Wood Pewee																	
Cuban Wood Pewee																	
Cuban Grouse																	
Tawny-shouldered Blackbird																	
Cuban Redwing																	
Cuban Meadowlark																	
Orchard Oriole																	
Baltimore Oriole																	
D'Orbigny's Blackbird																	
Cuban Grackle																	
Cuban Bullfinch																	
Indigo Bunting																	
Painted Bunting																	
Yellow-faced Grassquit																	
Melodious Grassquit																	
Cuban Martin																	
Cuban Cliff Swallow																	
Tree Swallow																	
Red-eyed Vireo																	
White-eyed Vireo																	
Gundlach's Vireo																	
Ramsden's Honey Creeper																	
Gundlach's Warbler																	

	Pinar del Rio Pinar - Vinales Vinales	Los Banos Los - Esparanza Esparanza Cayo Hueso	Sta. Lucia	Dimas Ensenada de Sta. Rosa	Los Arroyos Cape Cajon	San Antonio La Fee - Mendoza	Vinales Pinor del Rio & Vinales	Vinales - Los Banos La Mula to Mt. Guajabon	Bahia Honda Mt. Guajabon	Bahia Honda to Cabanas	Cabanas
Royal Tern		1									
Least Tern											
Anhinga		1									
Mexican Cormorant		1		1 1 1							
Brown Pelican		1		1 1							
Man-o'-war Bird				1 1 1 1				1			
West Indian Tree Duck		1		1				1 1			
White Ibis		1		1							
Glossy Ibis				1							
Caribbean Great Blue Heron		1									
Egret		1		1							1
Snowy Egret		1									
Reddish Egret		1					1				
Louisiana Heron		1									1
Little Blue Heron		1	1 1	1				1 1 1			
Cuban Green Heron		1		1			1 1	1			
Black-crowned Night Heron				1			1				
Yellow-crowned Night Heron		1									
Cuban Sandhill Crane						1					
Cuban Clapper Rail			1								
Coot						1					
Black-necked Stilt					1						
Killdeer Plover			1								
Antillean Plover					1 1						
Mexican Jacana								1			
Bobwhite											
Cuban Bobwhite							1 1	1	1 1	1	
Red Pigeon								1 1			
White-crowned Pigeon					1 1			1			
West Indian Mourning Dove			1	1	1	1 1	1 1 1	1 1 1	1 1 1	1	
Zenaida Dove			1	1	1	1	1 1	1			1
Cuban Ground Dove			1	1 1	1 1	1	1 1	1 1 1	1 1 1	1	
Turkey Vulture			1	1 1	1 1 1	1 1	1 1	1 1	1 1	1	
Mexican Black Hawk			1								
Cuban Sparrow Hawk	1 1 1						1 1 1 1	1 1 1 1	1 1 1 1		
Audubon's Caracara							1				
Cuban Parrot									1		
Ani			1			1 1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1	
Cuban Lizard Cuckoo			1	1	1	1 1 1	1 1 1	1 1 1	1 1 1	1	
Cuban Tropicbird						1			1 1 1		1
Cuban Tody					1	1	1	1 1 1	1 1 1		1
Cuban Green Woodpecker					1	1 1		1 1 1	1 1 1		1
Supercilious Woodpecker			1	1	1	1 1 1	1 1 1	1 1 1	1 1 1	1 1	
Cuban Flicker						1		1 1	1 1		1
Cuban Night Hawk			1		1		1	1 1 1			
Ricord's Hummingbird						1	1		1 1		
Kingbird							1 1 1 1	1	1	1	
Gray Kingbird			1	1 1 1	1 1 1	1		1 1 1			1
Crested Flycatcher							1?	1?	?		1?
Cuban Wood Pewee									1		
Bobolink			1								
Tawny-shouldered Blackbird			1	1 1	1	1 1					
Cuban Redwing							1				
Cuban Meadowlark			1				1 1	1 1 1 1	1 1 1 1		
Cuban Oriole			1	1			1 1 1	1 1 1	1 1 1		
D'Orbigny's Blackbird			1	1 1	1	1		1 1 1 1	1 1 1 1		
Cuban Grackle	1		1	1 1 1	1 1 1	1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1	
English Sparrow								1 1			
Yellow-faced Grassquit			1		1		1 1 1 1 1	1 1 1 1 1	1 1 1 1 1		
Melodious Grassquit									1		
Cuban Martin	1		1 1				1 1 1 1 1	1 1 1 1 1	1 1 1 1 1		
Cuban Cliff Swallow							1 1 1 1 1	1 1 1 1 1	1 1 1 1 1		
Tree-Swallow											
Red-eyed Vireo			1		1 1 1	1 1 1	1	1 1 1	1 1 1		
White-eyed Vireo							1				
Gundlach's Warbler							1				
Fernandinas Warbler			1								
Hooded Warbler								?			
Mockingbird			1			1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1	
Gundlach's Mockingbird									1		
Red-legged Thrush			1	1			1 1 1 1 1	1 1 1 1 1	1 1 1 1 1	1	

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One of the most beautiful birds in the entire island is the little Tody, which, excepting the Humming birds, is the smallest of the feathered inhabitants of the island. Its entire length from the tip of the bill to the tip of the tail being about 3 3/4 inches. The entire dorsal parts of the bird are a brilliant, grass green. There is a large throat patch of bright scarlet, bordered by a zone of white at the angle of the bill, which is replaced toward the posterior end of the patch by a bright blue. The under parts are white and smoky and the flanks are washed with a pale scarlet. This little gem may be found anywhere along the western end of Cuba, usually in the low shrubbery, bordering some path and he invites your attention by his song, which recalls faintly his relationship to the King-fisher, for if you were to analyze the Kingfisher's rattling note by repeating it slowly on a graphophone it would give you a somewhat similar result. The song of the Tody is chu-chu-chu, quickly repeated four to ten times. He has another note that resembles his name, which is simply a call note emitted at irregular intervals. The song on the other hand is oft repeated and once having learned this note it is not at all difficult to see toodies frequently. The little chap is fearless and permits you to come within a few feet of him, singing away for dear life and paying no attention to you whatsoever.

In feeding habits they are fly-catchers, snapping up insects on the wing, then returning to the perch and sitting quietly, with head drawn in, the beak pointing upwards, patiently awaiting the near approach of another victim. In their nesting habits, however, they resemble the Kingfisher, depositing their pure white eggs in holes which they dig in banks of ravines or ditches.

They are peculiar to the Greater Antilles, one species being found in Cuba, two in Haiti, one in Jamaica, one in Porto Rico, and another of unknown habitat. They are general favorites with the natives on account of their excessive tameness and pretty plumage, the Jamaican species being known to the inhabitants as "Robin Redbreast".

All through the interior the cheerful note of the Bob White may be heard. About Havana we noticed that all are the larger species of Bob White, which has been introduced into Cuba from the United States, while at the western end it is the smaller darker Cuba form.

Of the pigeons one sees the West Indian Mourning Dove and the Zenaida Dove and the Cuban Ground Dove almost everywhere, but the large red pigeon seems to be confined to the mountain regions. We found them very abundant in the mountains about Los Banos. The White Crowned Pigeon on the other hand appears very common along the coast. This is the one we brought home caged.

Of the birds of prey the Turkey Buzzard is omni-present and the little Cuban Sparrow Hawk is almost as abundant. Audubon Caracara we saw but once (at La Fee) and the Mexican Black Hawk, also a single time at Santa Lucia. Another rather rare bird which we had the opportunity of seeing for a while was the huge Sandhill Crane, which frequented a grassy plain near La Fee.

Another striking bird, which is present all along the coastal region, is the Cuban Oriole, a black bird with bright yellow shoulders and bright yellow rump and under tail coverets, the under side of the axillaris of the wing is also yellow. This bird reminds one strongly of our cat-bird for he seems to be the alarmist among the birds. If he is in the neighborhood, a little sneaking, such as is usually employed by the ornithologists to lure the birds from their hiding, will always attract them and cause them to scold and say all sorts of things about the intruder, coming close enough to you while vociferating to permit you to secure photographs of them. They are usually joined in this by the Supercilious Woodpecker and frequently by the Cuban Green Woodpecker and the White-eyed Vireo.

Another extremely strikingly colored bird is the Cuban Trogan, which has the top of the head metallic purple, the entire back a metallic green, the under parts pale gray, a little lighter on the throat and the posterior belly and the under tail coverets scarlet, the primaries of the wing and part of the secondaries are marked by white bars. The outer tail feathers are also tipped with broad bands of white, the whole giving the bird a strikingly brilliant coloration. The Trogan is rather inclined to affect thickets and it is only now and then that in travelling along an unfrequented path or along a stream that one sees these birds in the open, a brilliant mark when the sun-light plays upon their plumage. Here again the note leads one to the bird. This call suggesting our northern Cuckoos.

In passing from Mt. Guajabon to La Mulata we saw a number of small flocks of Cuban Parrots, and we also noticed some of the royal palms with large holes in the upper portion of their trunk, excavated by these parrots for breeding sites.

At Santa Lucia we found a large rookery of water birds in the dead Mangroves bordering the mainland. Here we saw large numbers of Mexican Cormorants breeding, some of the nests containing fresh eggs, while others had almost full grown young. Here also we noted the Anhinga or Snake bird; a pair of West Indian Tree Ducks, breeding in an old tree; some American Egrets, the Reddish Egret, the Snowy Egret, The Louisiana Heron, the Little Blue Heron, the Cuban Green Heron and a Yellow-crowned Night Heron, all had nests in this colony. In addition to these we saw between two and three hundred White Ibis, but we did not find their nests, it is possible that the time of our visit did not coincide with their breeding period.

This rookery is a rather large one, extending over a little more than a mile of the coast and there were many thousands of birds in it.

In the mountain regions one meets with a very curious bird, the Cuban Lizard Cuckoo, a rather large individual, almost twenty inches in length, of which the long, broad tail makes up three-fifths of its entire length, while the bill adds almost two inches at the other end. The Lizard Cuckoo is a variable clown, curious, inquiring and extremely amusing. (Tell what you know about its note and give its Spanish name). It can readily be called up by repeating its note, but it always insists on keeping some branches or something between you and him and also to remain in the shade near you, thus rendering photographing almost an impossibility. Having called him to you he will look at you, moving his tail side-wise, probably extending it at right angles to the body and holding it to one side for a while or he may cock it upward like a Wren or swish it from side to side, then sneak away slyly, almost like a shadow, or he may spread his wings and tumble all over himself and chatter away as if he had discovered the most amusing thing possible and could not resist bubbling over with mirth. At such times he is so comical that you cannot help joining him in his laughter. All in all he can be called one of the most interesting members of the Cuban Avifauna. The color of the bird is a pale grayish brown with a metallic flush, about the primaries cinnamon color, the throat and the anterior part of the under surface are grayish, washed with pale brown, while the posterior portion is pale reddish brown. The large, broad tail feathers, excepting the inner ones, which are the longest, are tipped with white and crossed by a broad band of black just within the white tip.

One of the very commonest of Cuban birds, which comes to the outskirts of the cities and is found along the country road, in fact everywhere where cattle may be found, is the "Tick Bird", or Cuban Ani. A Blackish bird of about the size of the Boat-tailed or Purple Grackle with a metallic sheen having a curious crest upon the upper mandible. This bird frequently can be seen perched upon the back of the cattle searching for grubs, or you may see them on the fences or in the bushes along the road-side in family groups. When disturbed they will fly from one bush to another, repeating their name, Ani, Ani, Ani, over and over again.

The animal to which you refer as Branchiostoma is not that, but is Ammotriypahe, a Polychaetae worm. These are very peculiar animals belonging to an aberrant group of the order just mentioned. I am going to have the specimens histologized some day and see if they are not closely related to the Lancelet. They live in the land just like the Lancelet.

364 }
190 } *Iris s. olwacea*.
365 }

119 *Nesocelus fernandezianus*

119 *Sauvothera merlini*

119 *Tolmarchus* :

176 *Xiphidiognathus percussus*

190 *Iodius multicolor*

364 ♂ *pindalis* *Pretrei*